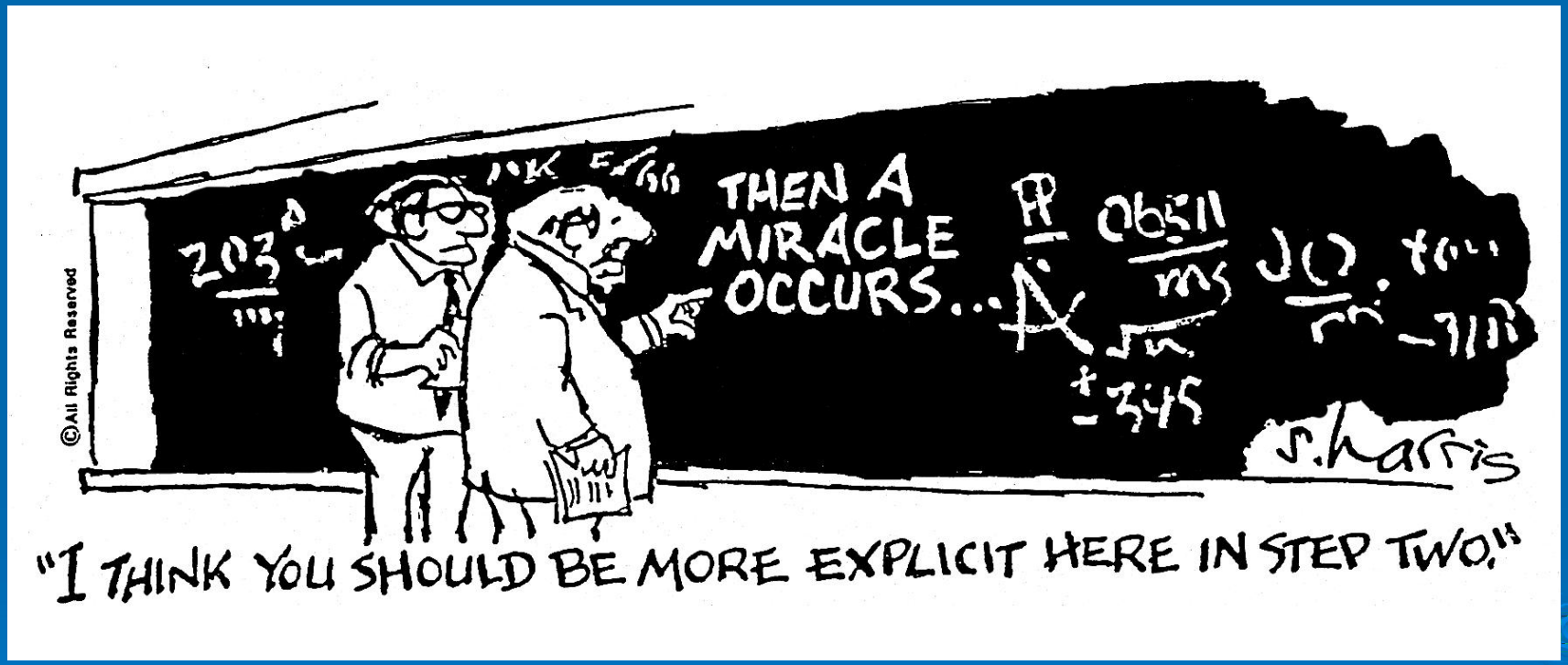
TB Case Management



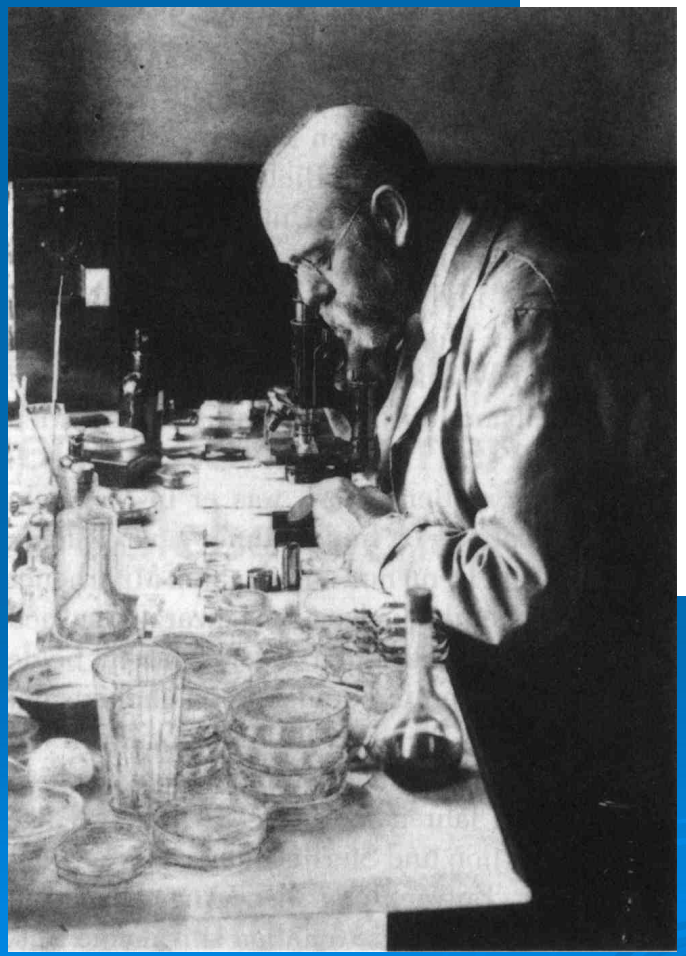
Magic Happens

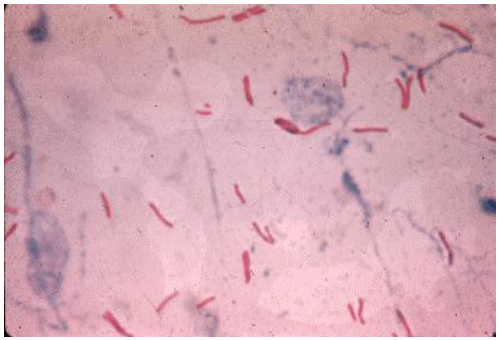
TB Case Management – Defining the Magic

- Series of videoconferences
  - Initial steps – Today
- Tentative schedule for future sessions
  - Monitoring and ongoing activities – 5/24/10 2PM
  - Contact investigation – 6/7/10 10AM
  - Additional resources and activities – 6/29/10 11AM

TB Overview

M tuberculosis as causative agent for tuberculosis





Robert Koch ~ 1882

The Mycobacteria

- > 75 named species
  - Human pathogens (mostly)
  - Animal/avian pathogens (mostly)
    - Opportunistic pathogens for humans
  - Non-pathogens (usually)

The Mycobacteria

Human pathogens (mostly)

M tuberculosis Complex

(*M tuberculosis, M bovis, M microti, M africanum*)

M leprae

M tuberculosis Complex

M tuberculosis – humans

M africanum - humans

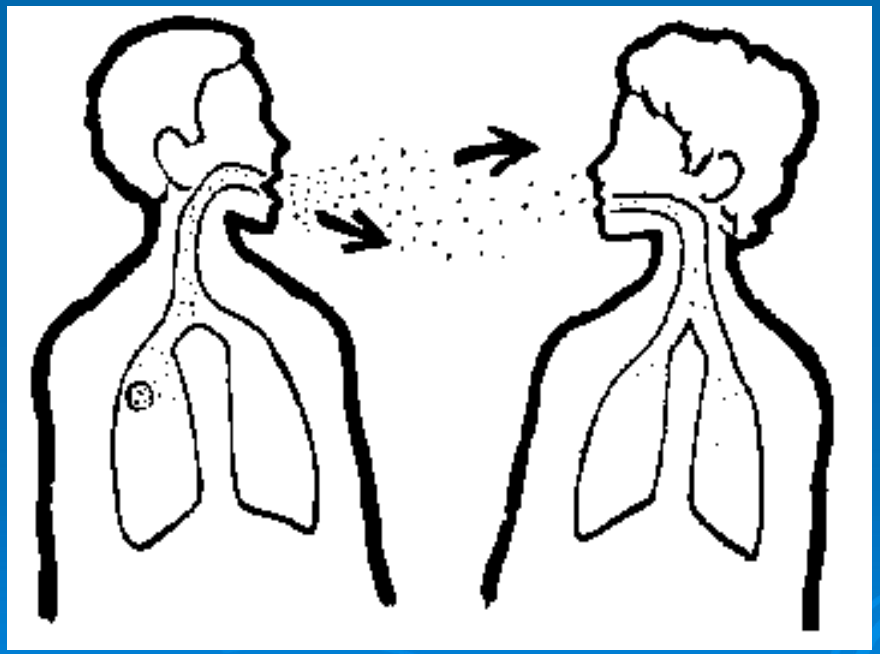
M bovis – cattle, humans, other primates

M microti – voles, guinea pigs, rabbits

TB: Airborne Transmission

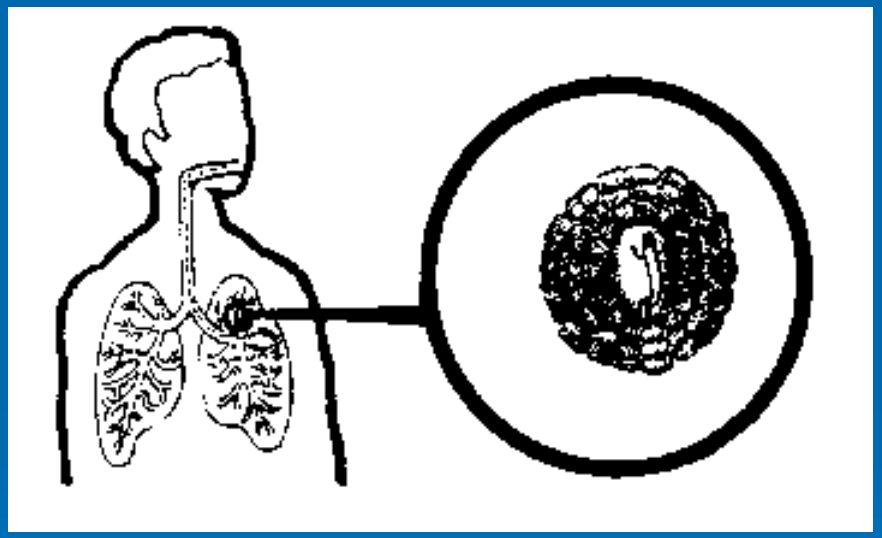
Person with active pulmonary TB

TB bacteria in "droplet nuclei"



Person breathing TB bacteria

TB Invades/Infects the Lung



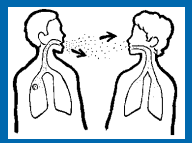
Effective immune response

Infection limited to small area of lung

Immune response insufficient

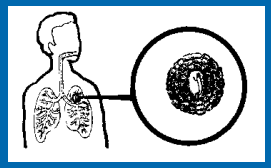
Natural History of TB Infection

Exposure to TB



No infection
(70-90%)

Infection
(10-30%)



Latent TB
(90%)

Never develop
Active disease

Active TB
(10%)

Untreated

Die within 2 years

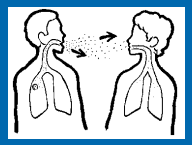
Survive

Treated

Die

Cured

Natural History of TB Infection



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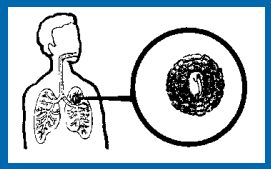

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Cured

TB Disease

- *M tb* actively growing/destroying tissue in one or more locations
- Symptoms vary depending on location
  - Pulmonary TB
    - Cough > 2 weeks duration
    - Weight loss
    - Fever
    - Night sweats

Latent TB vs. Active TB

Latent TB (LTBI)
= TB Infection
= No Disease
= NOT SICK
= NOT INFECTIOUS

Active TB
= TB Infection which has
progressed to TB Disease
= SICK (usually)
= INFECTIOUS if PULMONARY (usually)
= NOT INFECTIOUS if not PULMONARY (usually)

TB Epidemiology

- World
  - 1in 3 people in world infected
  - ~ 8 million new cases of active TB/year
  - 2+ million deaths/year
- US
  - ~13,800 new cases of active TB in 2006
- Virginia
  - 273 new cases of active TB in 2009
  - Know your local epidemiology !

Treatment of TB Disease

Treatment of TB Disease

- Overall goals
  - Cure the individual patient
  - Minimize transmission within the community
- **Responsibility for successful treatment is assigned to public health department or private provider, not individual patient.**
- Health department ultimately responsible for ensuring adequate, appropriate treatment.

Treatment of TB Disease

- 4 regimens approved for drug susceptible disease
- Recommendations for HIV-infected same with a few exceptions
  - Twice weekly options are not recommended for HIV+ patients with CD4+ cell counts less than 100
- Once weekly rifapentine regimens only for HIV – patients with negative smears at the completion of 2 months treatment and a non-cavitary x-ray.

Antituberculosis Drugs Currently in Use in the United States

- First-line Drugs
  - Isoniazid
  - Rifampin
  - Rifapentine
  - Rifabutin*
  - Ethambutol
  - Pyrazinamide
- Second-line Drugs
  - Cycloserine
  - Ethionamide
  - Levofloxacin*
  - Moxifloxacin*
  - Gatifloxacin*
  - *P*-Aminosalicylic acid
  - Streptomycin
  - Amikacin/kanamycin*
  - Capreomycin

Treatment Pearls

- Ethambutol can be discontinued once susceptibility to INH and RIF demonstrated
  - Requires physician order
- PZA must be continued for full recommended course to qualify for short-course treatment
- DOT standard of care for all – extremely important for co-infected

Drug Regimens for Culture-Positive TB with Drug Susceptible Organisms

Regimen 1

- Initial phase
  - INH/RIF/PZA/EMB
    - 7 d/wk for 56 doses (8 weeks)
    - Option – 5 d/wk for 40 doses (8weeks)
- Continuation phase
  - INH/RIF
    - 7 d/wk for 126 doses (18 weeks)
    - 5 d/wk for 90 doses (18 weeks)
    - Twice weekly for 36 doses (18 weeks)*
  - INH/RPT
    - Once weekly for 18 doses (18 weeks)*

Drug Regimens for Culture-Positive TB with Drug Susceptible Organisms

Regimen 2

- Initial phase
  - INH/RIF/PZA/EMB
    - **7 d/wk for 14 doses (2 weeks)**
    - **Then twice weekly for 12 doses (6 weeks) ***

    OR
    - **5 d/wk for 10 doses (2 weeks)**
    - **Then twice weekly for 12 doses (6 weeks)***
- Continuation phase
  - INH/RIF
    - **Twice weekly for 36 doses (18 weeks)***
  - INH/RPT
    - **Weekly for 18 doses***

Drug Regimens for Culture-Positive TB with Drug Susceptible Organisms

Regimen 3

- Initial phase
  - INH/RIF/PZA/EMB
    - Three times weekly for 24 doses (8 weeks)
- Continuation phase
  - INH/RIF
    - Three times weekly for 54 doses (18 weeks)

Drug Regimens for Culture-Positive TB with Drug Susceptible Organisms

Regimen 4

- Initial phase
  - INH/RIF/EMB
    - **7 d/wk for 56 doses (8 weeks)**

    or
    - **5 d/wk for 40 doses (8 weeks)**
- Continuation phase
  - INH/RIF
    - **7 d/wk for 217 doses (31 weeks)**
    - **5 d/wk for 155 doses (31 weeks)**
    - **Twice weekly for 62 doses (31 weeks)***

Completion of Treatment

- Determination made more accurately by total number of doses taken, not time period
- Goal is to deliver the recommended specified number of doses in a maximum time frame
  - Important in cases of non-adherence, toxicity
  - 6 month daily 182 dose regimen should be completed in 9 months maximum

Completion of Treatment – cont.

- Interruptions may have significant impact on duration of treatment
- Earlier in treatment and longer the duration, the more serious the effect.
- May need to restart treatment from beginning.

Isoniazid

- Preparation
  - 50 mg, 100 mg, and 300 mg tablets
  - Suspension (can cause diarrhea and cramping)
    - Suspension must be kept at room temperature
- Administration tips
  - Can be cut or crushed
  - Do not take with large fatty meal
  - If upsets stomach, take with small amount of food
  - Avoid alcohol
  - No antacids within 1 hour

Isoniazid

- Adverse Reactions and Side effects
  - Hepatitis
    - Loss of appetite
    - Tiredness, weakness
    - Stomach pain, nausea, vomiting
    - Yellow skin or dark colored urine
  - Can cause flushing with some fish or cheeses
  - Peripheral neuritis
    - Numbness or tingling in hands or feet
  - Arthralgias
  - Optic neuritis

Rifampin

- Preparation
  - 150 mg and 300 mg capsules
- Administration tips
  - Store at room temperature – humidity can affect
  - Powder from capsules can be mixed with liquid or soft food
  - Must be administered immediately after mixing
  - Be careful in opening capsules!

Rifampin

- Adverse Reactions and Side effects
  - Orange staining of body fluids – fast!
    - Will stain soft contact lens
  - Rash
  - GI upset, flu-like syndrome
  - Liver toxicity
    - Unusual tiredness or loss of appetite
    - Sever abdominal pain
    - Fever chills

Ethambutol

- Preparation
  - 100 mg and 400 mg tablets
- Administration tips
  - Store at room temperature
  - Can be taken with food
  - Can be split or crushed and mixed – used immediately

Ethambutol

- Adverse Reactions and Side effects
  - Visual disturbances – vision changes, blurring, color blindness, trouble seeing, eye pain
  - Swelling of face
  - Rash, hives, trouble breathing
  - Numbness, pain or tingling of hands/feet
  - Joint pain
  - Fever chills
  - Nausea, vomiting, poor appetite, abdominal pain
  - Headaches, dizziness

Pyrazinamide

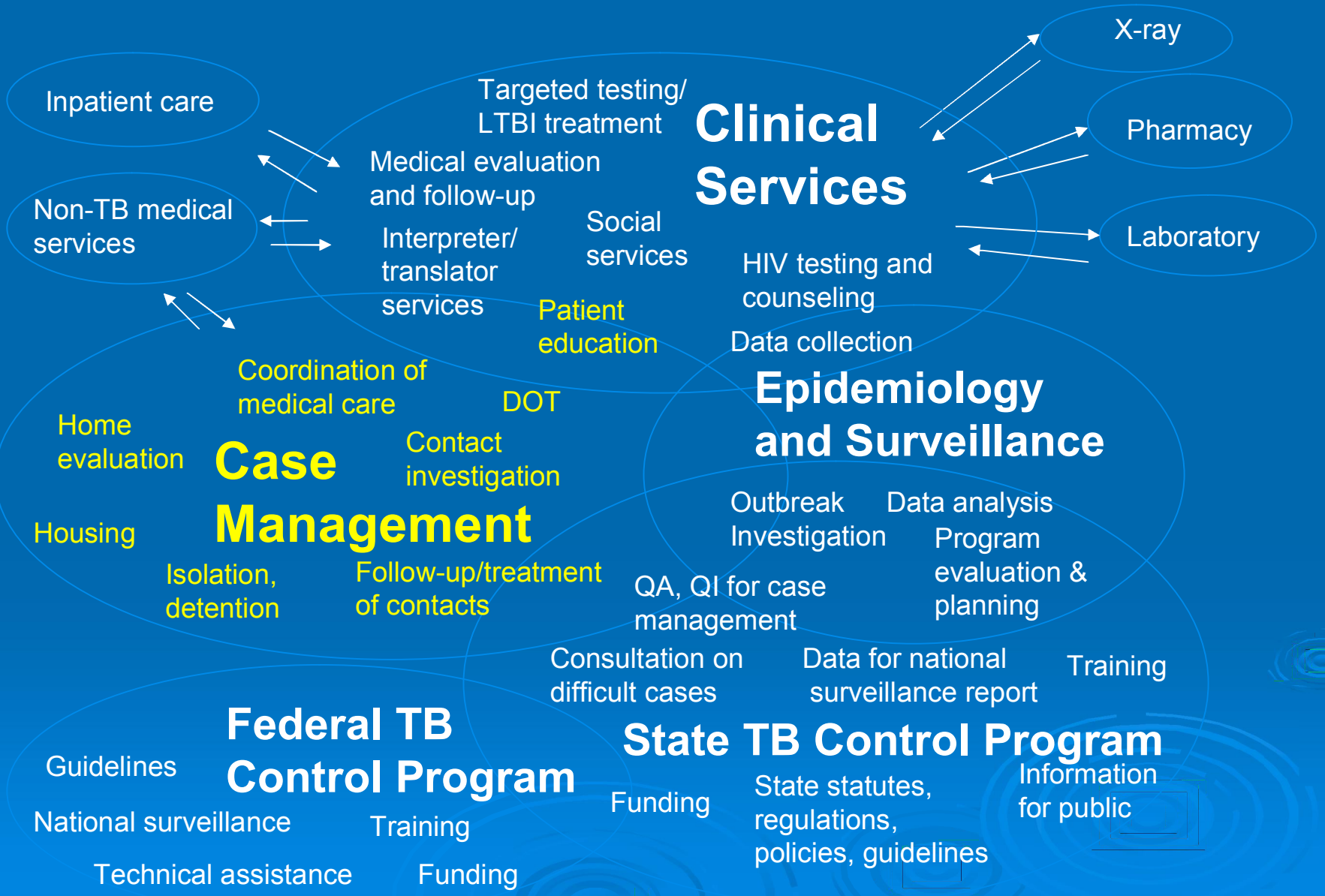
- Preparation
  - 500 mg tablets
- Administration tips
  - Store at room temperature
  - May be taken with food
  - Can be split or crushed
  - Use immediately following mixing with food

Pyrazinamide

- Adverse Reactions and Side effects
  - Can cause rash after sun exposure – limit sun exposure
  - Gout-like symptoms (pain swelling in joints)and arthralgias
  - GI upset
  - Liver toxicity –
    - yellow skin/dark urine
    - nausea/vomiting
  - Skin rash, severe itching, hives

Case Management

Elements of a Tuberculosis Control Program



Definition

- Primary responsibility for coordination of patient care to ensure that the patient's medical and psychosocial needs are met through appropriate utilization of resources

Responsible and accountable to ensure:

- The case
  - Completes a course of therapy
  - Is educated about TB and its treatment
  - Has documented culture conversion
  - Has a contact investigation completed, if appropriate

Primary goals of case management

- Render the patient non-infectious by ensuring treatment
- Prevent TB transmission and development of disease
- Identify and remove barriers to adherence
- Identify and address other urgent health needs

I got a new case!!!

What do I do now?

TB Control Priorities

- Deal with the case
  - Diagnosis
  - Isolation
  - Treatment
- Deal with the contacts
  - Identification
  - Evaluation
  - Treatment
- Targeted Testing and treatment

Initial steps to the reported TB case or suspect

- **Receive the case report**
  - **Gather as much info as possible from report source**
  - **Intake Form**
    - **Demographics**
    - **Patient weight**
    - **Diagnostic work-up to date**
      - **REQUEST COPIES OF EVERYTHING!!!!**
    - **Current treatment, if any**
    - **Risk factors**
    - **Other important facts**
      - **Family/living situation**
      - **Work place/school**

Initial steps to the reported TB case or suspect

- Local case manager assigned preferably within 24 hours
- Report to TB Control
  - 804-864-7906
  - Bill White – 804-540-5079
  - Tim Epps – 804-840-5057

Initial steps to the reported TB case or suspect

- Initial contact with treating provider and client within 3 days
- Consult with medical provider to gather additional information and treatment plan, if needed
- Conduct initial interview with patient
  - Recommend first visit in hospital, if hospitalized
  - Recommend home visit early in initial follow-up period
  - Assess home environment
    - Space, ventilation, presence of high-risk persons

Initial steps to the reported TB case or suspect

- Initiate new patient TB record

Initial steps to the reported TB case or suspect

- **Assess completeness of diagnostic work-up**
  - **CXR, TST, sputum, histology, HIV, blood work, other**
    - **Isolate sent to state lab if done by outside source**
    - **Insure three expectorated specimens are collected**
  - **Obtain copies of all relevant test results for HD chart**
  - **Obtain additional hospital records, if applicable**
    - **Discharge summary**
    - **MARs**
  - **Double check susceptibility order immediately**
- **Arrange for additional testing/medical care as needed**
  - **TST, CXR, sputum, HIV, baseline biochemistry tests**
  - **Baseline vision, color vision, hearing, etc.**

Initial steps to the reported TB case or suspect

- Assessment of the treatment plan
  - Re-calculate dosages
  - Enough meds?
  - Right meds?
  - Assess for potential drug-drug/food/herbal interactions
  - Follow agency policies and procedures for settlement of treatment plan disputes

Initial steps to the reported TB case or suspect

- Assessment of infectiousness
  - Sputum reports/collection
  - Determination of period of infectiousness
  - Isolation instructions and agreement
    - Isolation Form

Initial steps to the reported TB case or suspect

- If infectious, begin additional information gathering and interview for contact investigation
  - Identify and screen/test high priority contacts
    - Household and other close contacts
    - Small children
    - Immune compromised contacts

Initial steps to the reported TB case or suspect

- Initial patient education
  - Disease vs. Infection
  - Transmission, signs & symptoms, treatment and importance of completion, diagnostic procedures, monitoring and follow-up, meaning of test results.
  - Role of patient in treatment plan, role of case manager, role of health department
  - Treatment plan – Direct Observed Therapy (DOT Agreement form)
  - Handling side effects, change in symptoms
  - Disease of public health significance
    - Consequences for failure to follow treatment plan

Initial steps to the reported TB case or suspect

- Assess for barriers to care
  - Lack of knowledge
  - Cultural
  - Linguistic
  - Substance abuse
  - Homelessness
  - Payer source for care
- Arrange for resources and make referrals to assist and overcome barriers

- Assistance with nursing case management
  - Jane Moore - 804-864-7920
  - Brenda Mayes - 804-864-7968
- Assistance with medical management
  - 804-864-7906
  - Expert clinical consultants available through VDH TB Control